

Remarks

In the Office Action dated April 24, 2002, the Examiner rejected claim 27 under 35 U.S.C. § 112, second paragraph. The Examiner rejected claims 1-4, 6, 9, 11-17, 19, 21, 24, 25 and 29-32 under 35 U.S.C. § 102 as being anticipated by the U.S. Patent No. 6,160,824 to Meissner, et al. (hereinafter Meissner). The Examiner rejected claims 5, 7, 22 and 23 under 35 U.S.C. § 103 as being unpatentable over Meissner and in further view of the U.S. Patent No. 5,974,061 to Byren, et al. The Examiner rejected claim 8 under 35 U.S.C. § 103 as being unpatentable over Meissner and in further view of the U.S. Patent No. 5,371,757 to Largent. The Examiner rejected claim 10 under 35 U.S.C. § 103 as being unpatentable over Meissner and in further view of the U.S. Patent No. 4,310,808 to Byer, et al. The Examiner rejected claim 20 under 35 U.S.C. § 103 as being unpatentable over Meissner and in further view of routine skill in the art. The Examiner rejected claims 26 and 27 under 35 U.S.C. § 103 as being unpatentable over Meissner and in further view of the U.S. Patent No. 5,574,740 to Hargis, et al. The Examiner rejected claim 28 under 35 U.S.C. § 103 as being unpatentable over Meissner and in further view of the U.S. Patent No. 5,533,163 to Muendel. The Examiner failed to reject claim 18.

In the Specification

By this Amendment, Applicant's attorney has amended the Specification for consistency with FIGS. 12a-12d. No new matter has been added.

Rejection of Claim 27 Under 35 U.S.C. § 112, Second Paragraph

By this Amendment, Applicant's attorney has amended claim 27 to provide "the device is formed as a pair of separate waveguides" as described, for example, in FIGS. 10a-10d and on page 25, lines 3-15 on the specification. Accordingly, Applicant respectfully requests that the Examiner withdrawn the 35 U.S.C. § 112, second paragraph, rejection to claim 27.

Rejection of Claims 1-4, 6, 9, 11-17, 19, 21, 24, 25 and 29-32 Under 35 U.S.C. § 102

In view of the following remarks, Applicants respectfully contend that this rejection has been fully replied to and traversed, and that the application is in condition for allowance, which allowance is respectfully requested.

As recited in claim 1, Applicant's invention relates to a waveguide device comprising means for providing pump-light confinement and means for providing output mode control in different sections of the device along the direction of beam propagation. Independent claim 31 (method) provides similar recitations. Clearly, this feature is neither taught, disclosed nor discussed by the prior art cited by the Examiner.

The U.S. Patent to Meissner was known to Applicant and described on pages 8 and 9 of the specification. In particular, Meissner discloses a compound planar waveguide comprising multiple confinement structures. The planar waveguide may include a central laserable core layer substantially sandwiched by at least two non-laserable cladding layers to provide an interface between the inner surfaces of the cladding layers and the gain medium to define a first waveguide and the outer surfaces of the cladding layers define a second waveguide for containing pump radiation within the waveguide.

Meissner does not teach, disclose or discuss means for providing pump-light confinement and means for providing output mode control in different sections of the device along the direction of beam propagation. To the contrary, FIGS. 2 and 10 of Meissner cited by the Examiner in the Detailed Action clearly show the multiple confinement structures transverse to the direction of beam direction, not along the direction of beam propagation. Applicant respectfully contends that claims 1-4, 6, 9, 11-17, 19, 21, 24, 25 and 29-32 are patentable over Meissner.

Rejection of Claims 5, 7, 8, 10, 20, 22, 23, 26 and 27 Under 35 U.S.C. § 103

Regarding the rejections to claims 5, 7, 8, 10, 20, 22, 23, 26 and 27, which depend from claim 1, Applicant contends that these claims are patentable for at least the same reasons that claim 1 is patentable. Moreover, Applicant contends these claims recite further limitations, in addition to limitations of claim 1, which render these claims additionally patentable.

Consequently, in view of the above and in the absence of art other than the art already of record in this application, Applicants' attorney respectfully submits that the application is in condition for allowance which allowance is respectfully requested.

Respectfully submitted,

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Attachment

**VERSION WITH MARKINGS TO SHOW CHANGES MADE****In The Specification**

Please replace the paragraph beginning on page 26, line 16 as shown below.

Another embodiment of the present invention is generally indicated at 180 in Figures 12a-12d. In this embodiment, the waveguide device 180 is configured as a fiber and has a pumping section, generally indicated at 182, and mode control section, generally indicated at 184, which are different types of fiber and they are preferably fusion spliced together. A fiber used in the pumping section 182 has a core member 186 doped with the active laser ion and a relatively high NA, preferably 0.22 or greater and a pump cladding 185. A fiber used in the mode control section 184 has a core member 188 which may or may not be doped with the active laser ion and has a low NA, preferably less than 0.1. The fiber of the mode control section [186] 184 has a mode control cladding 187. Pump light from a pump laser diode 189 is coupled into a free end 190 of the pumping section 182. The low NA of the mode control section 184 permits a fiber laser or amplifier using this invention to maintain single mode output while using multimode fiber in the pumping section 182. The larger core size offers single mode output at higher power without the damage problems or nonlinear effects that might occur in a smaller core fiber at the same power level. Some care must be taken with the mounting and routing of the fiber in the pumping section 182 to avoid inducing stresses that might cause some of the propagating energy to couple into higher order modes which would be stripped by the mode control section 184.

In The Claims

27. (Amended) The device as claimed in claim 9 wherein the device [acts] is formed as a pair of separate waveguides which are butt-coupled or coupled together by an imaging system.